

## Abstract

To detect a stroke reliably at the time of the start of the engine when a stroke cannot be detected based on crank pulses alone.

A stroke is detected based on a difference  $\Delta N$  between the engine rotational speeds at top and bottom dead centers and a flag  $F_N$  is changed depending upon whether a temporary stroke set before a stroke has been detected and the detected stroke coincide with each other or not. Simultaneously, a stroke is detected based on a difference  $\Delta P$  between the intake air pressures at two bottom dead centers and a flag  $F_P$  is changed depending upon whether a temporary stroke set before a stroke has been detected and the detected stroke coincide with each other or not. Then, when the flags  $F_N$  and  $F_P$  coincide with each other, the stroke detection is completed. When the detected stroke differs from the temporary stroke, the stroke is shifted by a phase of  $360^\circ$  and the crank pulses are renumbered.